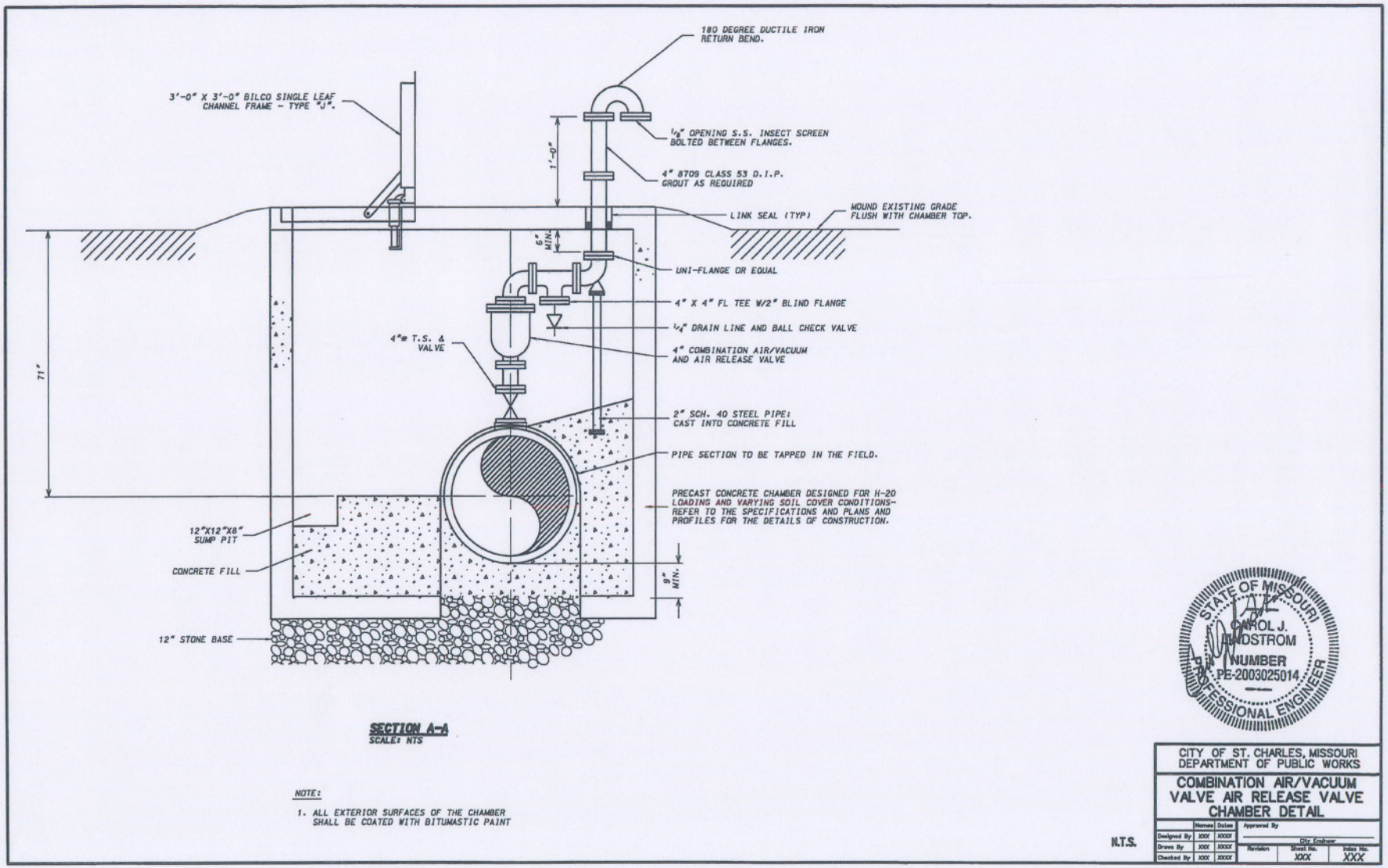

SECTION A-A
SCALE: NTS

NOTE:

1. ALL EXTERIOR SURFACES OF THE CHAMBER SHALL BE COATED WITH BITUMASTIC PAINT

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NUMBER PE-2003025014
PROFESSIONAL ENGINEER

N.T.S.

CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

COMBINATION AIR/VACUUM VALVE AIR RELEASE VALVE CHAMBER DETAIL

	Name	Date
Designed By	XXX	XX/XX/XX
Drawn By	XXX	XX/XX/XX
Checked By	XXX	XX/XX/XX

Approved By

City Engineer

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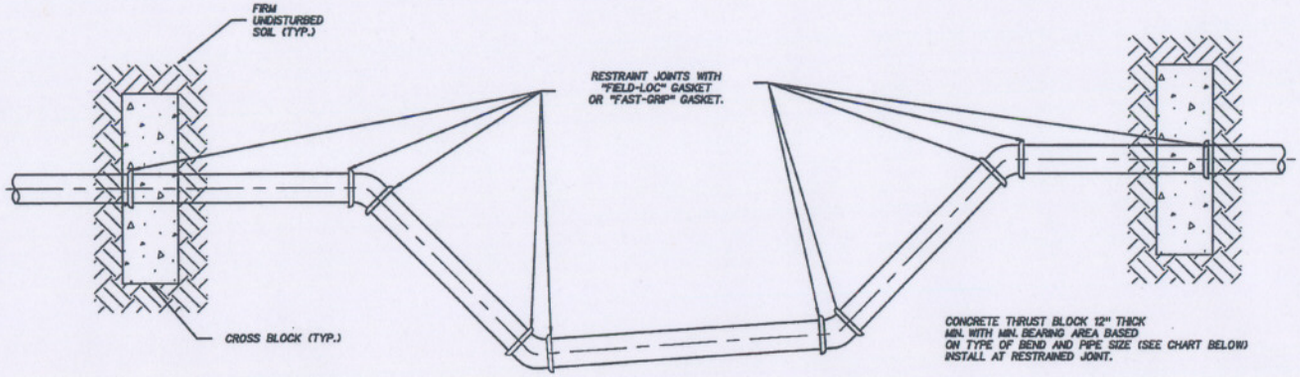

MINIMUM BEARING AREA IN SQUARE FEET

PIPE SIZE	BENDS (DEGREES) 11-1/4	22-1/2	45	90	TEE	DEAD END
6"	1.0	2.5	4.5	8.0	5.5	5.5
8"	2.0	4.0	7.5	14.0	10.0	10.0
12"	4.0	8.0	15	29.0	20.5	20.5

* BEARING AREAS ARE BASED ON SOIL HAVING AN ALLOWABLE SAFE LATERAL BEARING OF 1 TON PER SQUARE FOOT. AREA MUST BE REVISED FOR SOILS WITH A LOWER BEARING CAPACITY.

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TYPICAL THRUST RESTRAINT FOR D.I. OVER BENDS & PIPING AND DEAD-END AND REDUCER BLOCKING DETAILS

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

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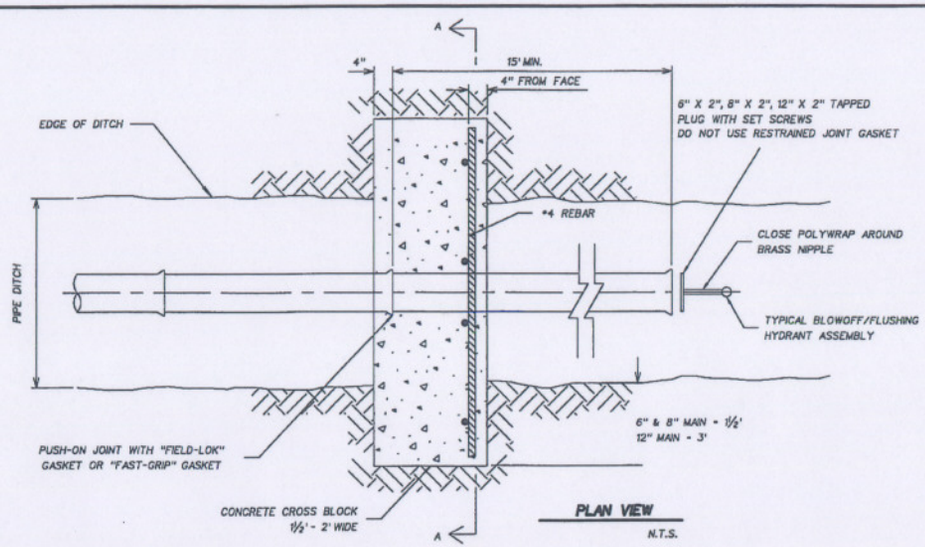
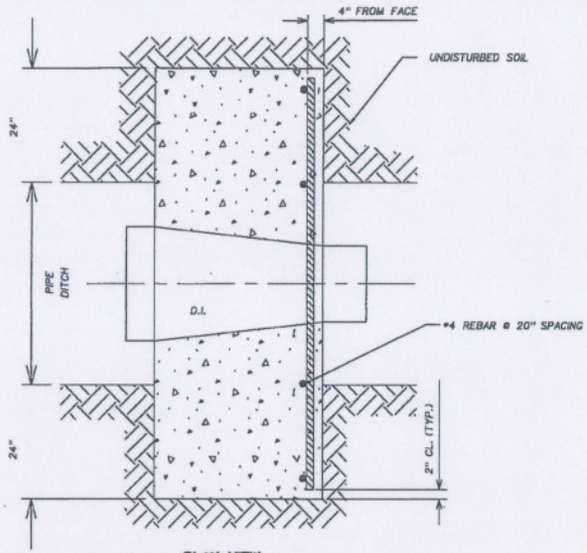


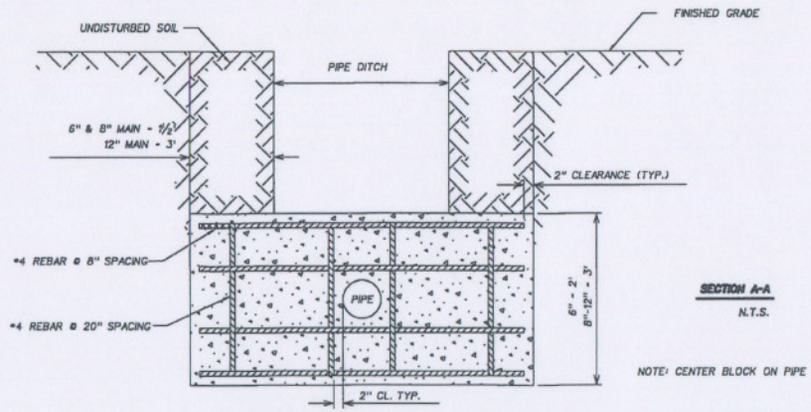
PLAN VIEW

N.T.S.



PLAN VIEW

N.T.S.



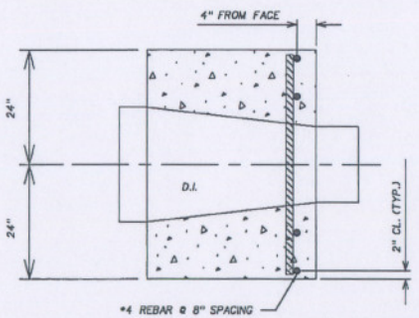
SECTION A-A

N.T.S.

NOTE: CENTER BLOCK ON PIPE

DEAD-END BLOCKING FOR 6", 8" & 12" PIPE USING RESTRAINED PUSH-ON JOINT WITH THRUST BLOCK

N.T.S.



NOTE: JOINT TO BE FREE OF CONCRETE

ELEVATION VIEW

N.T.S.

REDUCER THRUST BLOCK

N.T.S.

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CITY OF ST. CHARLES, MISSOURI
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TYPICAL THRUST RESTRAINT FOR D.I. OVER BENDS & PIPING AND DEAD-END AND REDUCER BLOCKING DETAILS

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

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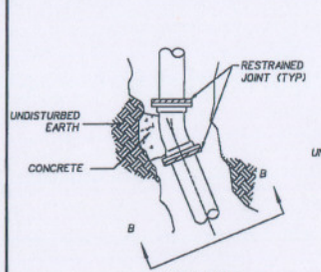
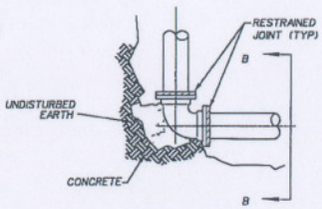
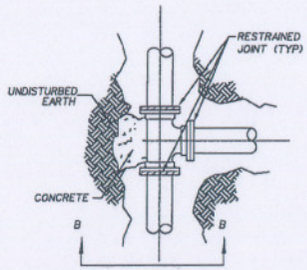


22.5° BEND
SCALE: NTS

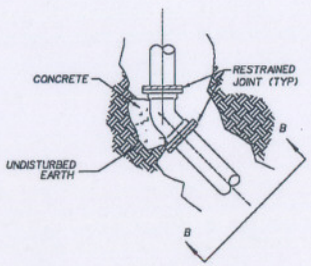


90° BEND
SCALE: NTS

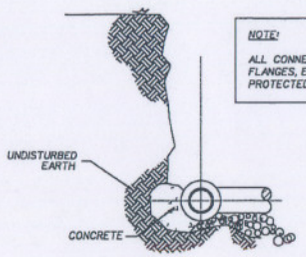


TEE
SCALE: NTS

*SEE SCHEDULE FOR THRUST BLOCK SIZES

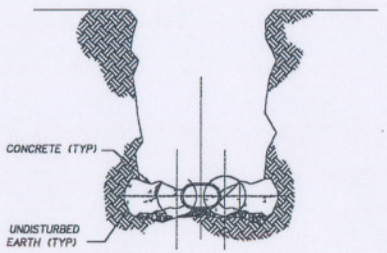


45° BEND
SCALE: NTS

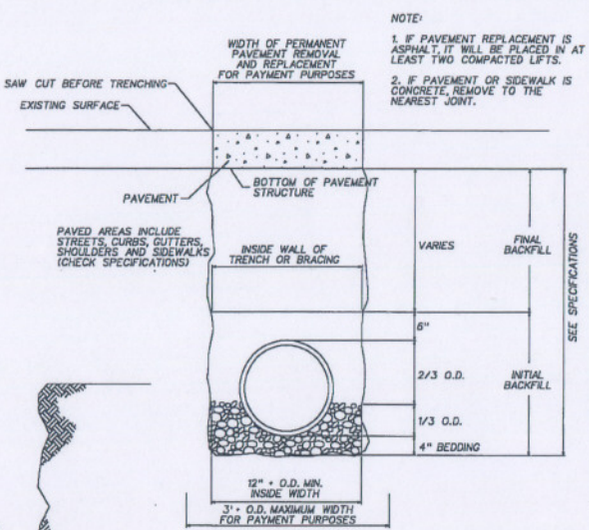


SECTION B - B
SCALE: NTS

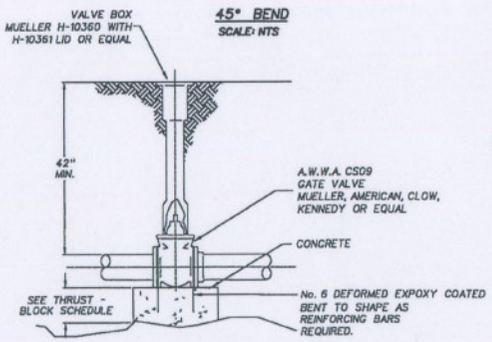
NOTE:
ALL CONNECTION BOLTS, GLANDS, FLANGES, ETC. MUST BE PROTECTED FROM CONCRETE.



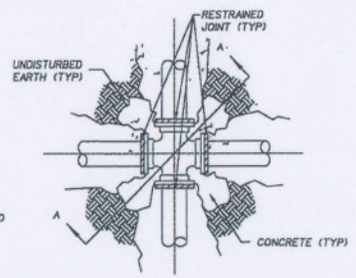
SECTION A - A
SCALE: NTS



TRENCH DETAIL
SCALE: NTS



GATE VALVE W/ THRUST BLOCK DETAIL
SCALE: NTS



CROSS
SCALE: NTS

SCHEDULE FOR THRUST BLOCK AREAS

	90 33/64 BEND (SQ. FT.)	45 33/64 BEND (SQ. FT.)	22-1/2 33/64 BEND (SQ. FT.)	11-1/4 33/64 BEND (SQ. FT.)	TEE & WYE (SQ. FT.)	DESIGN PRESS. (PSI)
	2.4	1.3	0.7	0.3	1.7	150
	9.7	5.3	2.7	2.0	6.9	150
	16.8	9.1	4.7	2.4	11.9	150

ASSUMED PRESSURE OF 150 PSI AND SOIL BEARING CAPACITY OF 2500 PSF

NOTE: THERE WILL BE NO SEPARATE PAY ITEMS FOR THRUST BLOCKS

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THRUST BLOCK DETAILS

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

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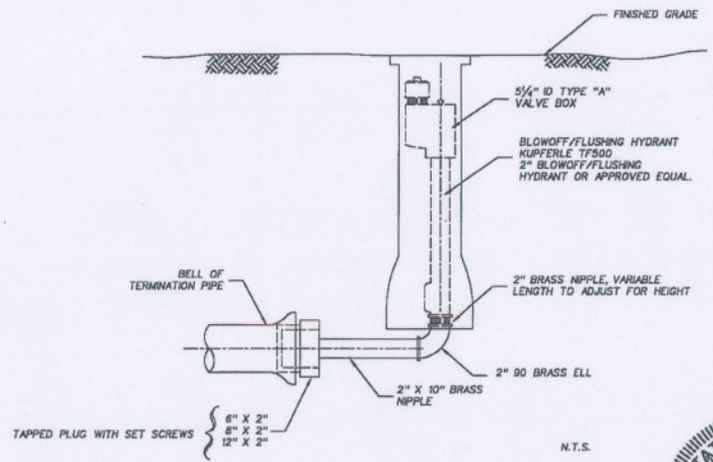

NOTE *1: BLOCKING OF TAPPED PLUG NOT SHOWN.

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TYPICAL BLOWOFF/FLUSHING HYDRANT ASSEMBLY

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By

City Engineer

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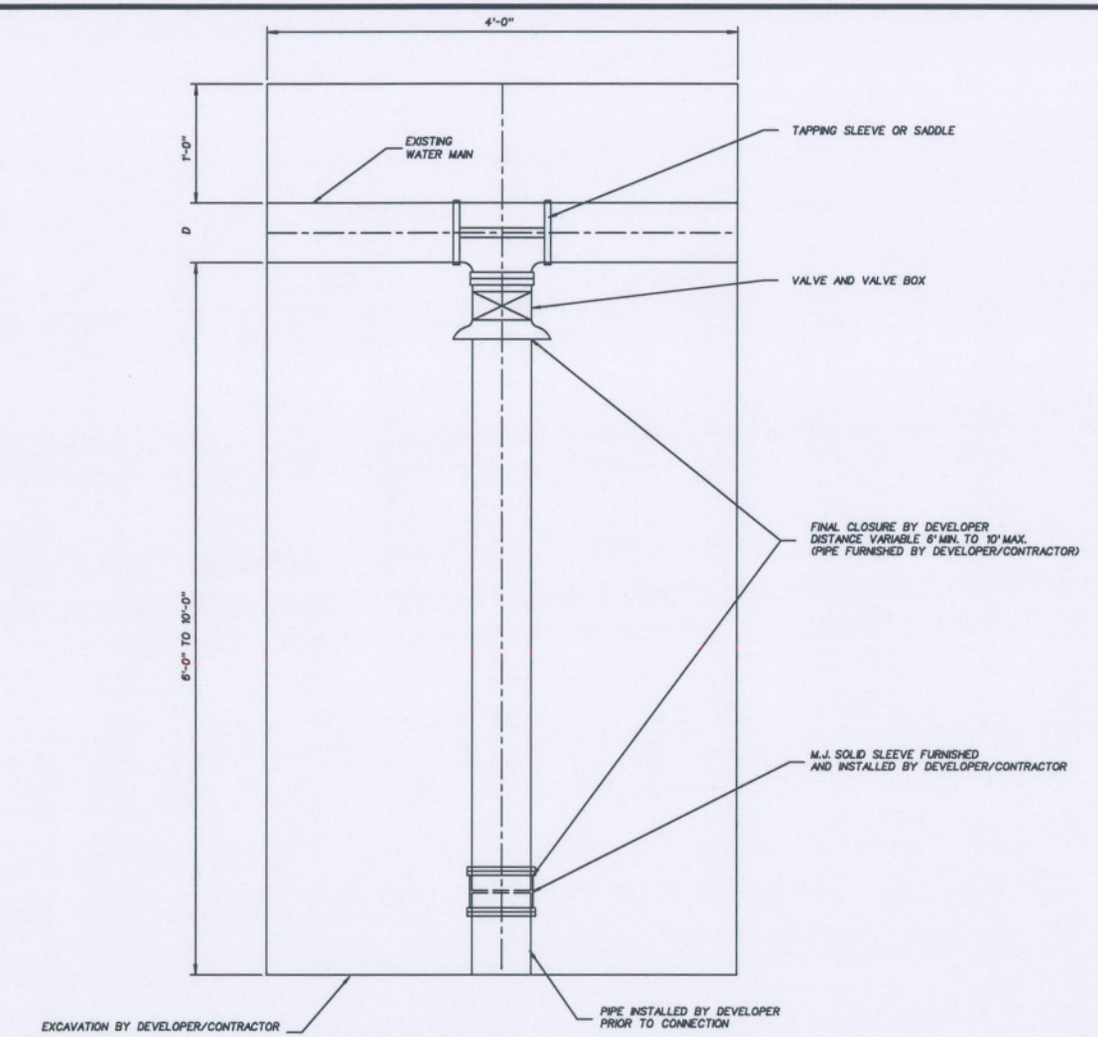

NOTE: BOTTOM OF EXCAVATION TO BE 1' BELOW BOTTOM OF PIPE AND REASONABLY LEVEL.

GENERAL RULES

1) CONNECTIONS TO AC (TRANSITE PIPE) REQUIRE AN EXCAVATION 6 FT. IN WIDTH ALONG THE MAIN "D" DIMENSION (MAIN SIZE) IS VARIABLE.
2) ALL EXCAVATIONS SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS FOR PROTECTION OF WORKERS.
3) IF PIPE BELL IS EXPOSED IN TAP HOLE OR OTHER OBSTACLES ENCOUNTERED, CALL THE CITY OF ST. CHARLES WATER DIVISION AT 636-949-3366, FOR FIELD REVIEW BEFORE COMPLETING EXCAVATION.
4) TAP HOLE SHOULD BE FREE OF WATER AND MUD TO ALLOW SAFE HANDLING OF HEAVY SLEEVES AND TAPPING MACHINE.
5) BLOCKING BEHIND TAP TO BE PER DETAILS.
6) MINIMUM 48 HOUR NOTICE TO CITY OF ST. CHARLES WATER DIVISION MUST BE APPROVED.
7) THE CITY RESERVES THE RIGHT TO REQUIRE AN M.J. OR PUSH ON JOINT TEE AT THEIR DISCRETION

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CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

WATER TAP CONNECTION

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

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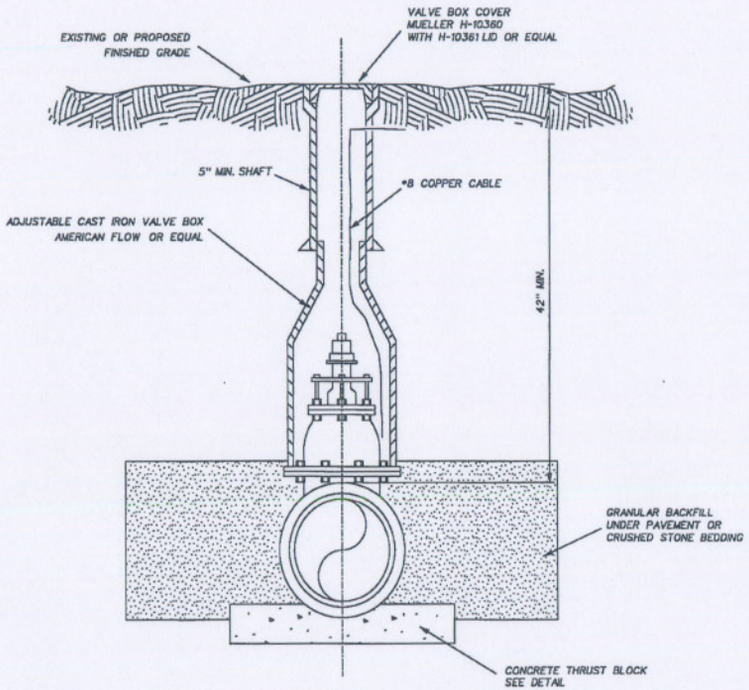

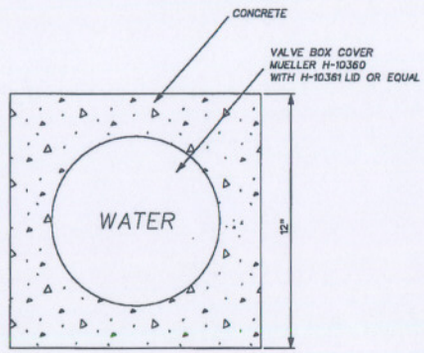

VALVE BOX COVER
(FOR PAVED SURFACES AND COMMERCIAL AREAS)
SCALE: NTS

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CAROL J. LINDSTROM
NUMBER
PE-2003025014
PROFESSIONAL ENGINEER

CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

TYPICAL VALVE BOX INSTALLATION

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

Revision	Sheet No.	Index No.
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N.T.S.

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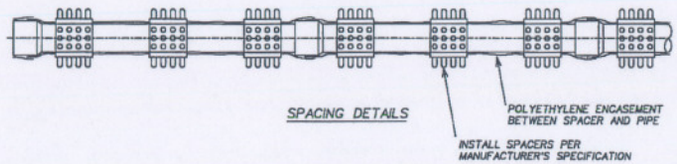

SPACING DETAILS

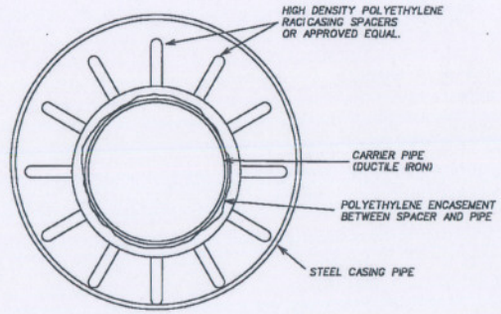

EXHIBIT I

ENCASEMENT SPACER DETAILS

N.T.S.

NOTES:

1) INSIDE DIAMETER OF CASING PIPE TO BE A MINIMUM OF 4" GREATER THAN COUPLING DIAMETER OF CARRIER PIPE.
2) ENCASEMENTS TO BE INSTALLED UNDER THE ROAD BY MEANS OF JACKING IT THROUGH OR BY DRY BORING A HOLE THAT WILL RECEIVE THE CASING WITH A SNUG FIT.
3) THE OUTSIDE DIAMETER OF THE CASING SHALL NOT BE LESS THAN, NOR MORE THAN ONE INCH GREATER THAN THE BORED HOLE.
4) THE ANNULAR SPACE BETWEEN THE CASING PIPE AND THE BORED HOLE SHALL BE FILLED WITH GROUT.
5) INSTALLATION OF THE CASING AND CARRIER PIPES SHALL MEET THE REQUIREMENTS OF THE CITY OF ST. CHARLES SPECIFICATIONS.
6) SEAL END OF CASING PIPE WITH ONE-PIECE LONG LIFE SYNTHETIC RUBBER COMPOUND, MINIMUM OF 1/8" THICK BY PIPELINE SEAL AND INSULATOR, INC. MODEL C OR APPROVED EQUAL.
7) ALL JOINTS IN THE CASING PIPE SHALL BE WELDED.
8) MINIMUM DEPTH OF 42" TO TOP OF CASING PIPE.

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JACK AND BORING DETAIL

N.T.S.

	Named	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By

City Engineer

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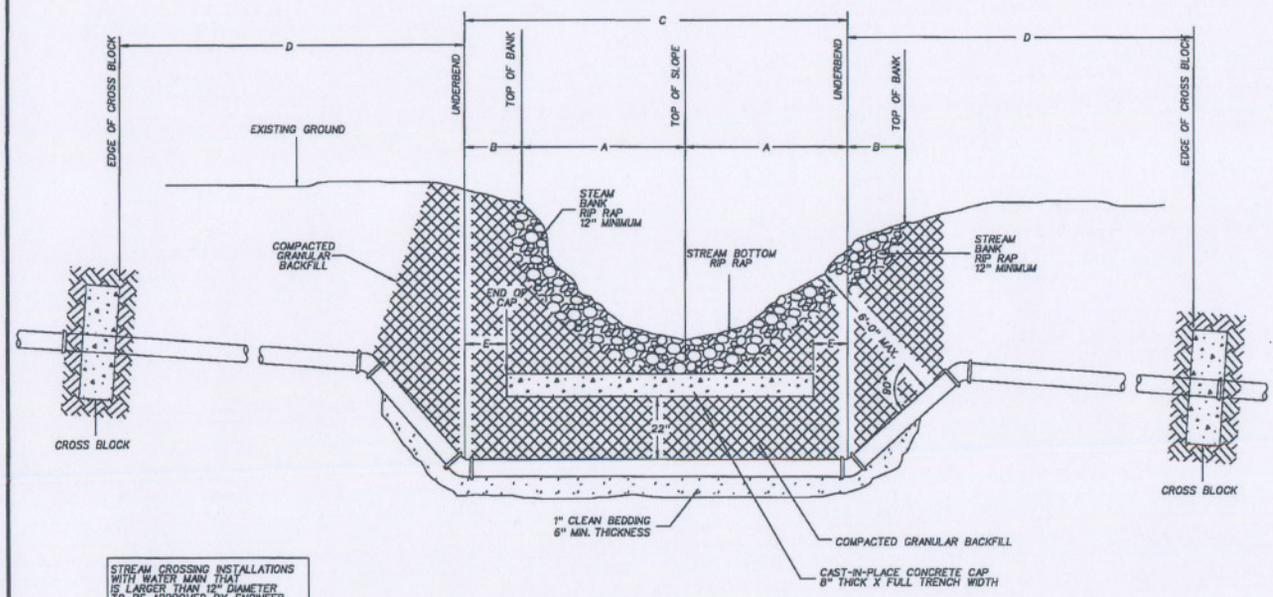

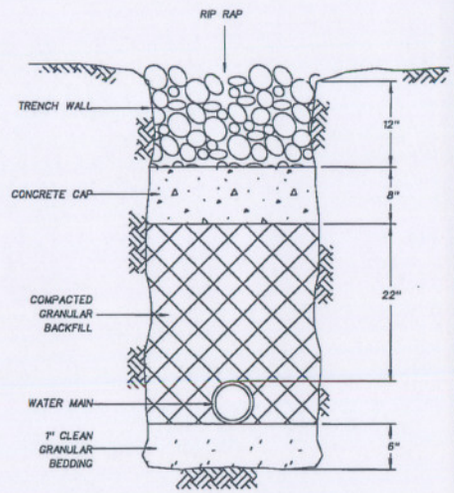

TYPICAL SECTION

STREAM CROSSING INSTALLATIONS WITH WATER MAIN THAT IS LARGER THAN 12" DIAMETER TO BE APPROVED BY ENGINEER.

NOTES:

- ALL JOINTS ARE RESTRAINED
- RIP RAP SIZE AND QUANTITY DETERMINED BY ENGINEER
- DIMENSIONS A,B,C,D & E DETERMINED BY FIELD REPRESENTATIVE
- FOR D.I. OVER/UNDER BENDS SEE WATER MAIN INSTALLATION DETAILS
- FOR CONCRETE THRUST RESTRAINT SEE WATER MAIN INSTALLATION DETAILS - DEAD END THRUST BLOCK
- 22" DISTANCE BETWEEN BOTTOM OF CONCRETE CAP AND TOP OF WATER MAIN

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PROFESSIONAL ENGINEER

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SOLID ROCK STREAM BOTTOM STREAM CROSSING DRAWING (C)

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

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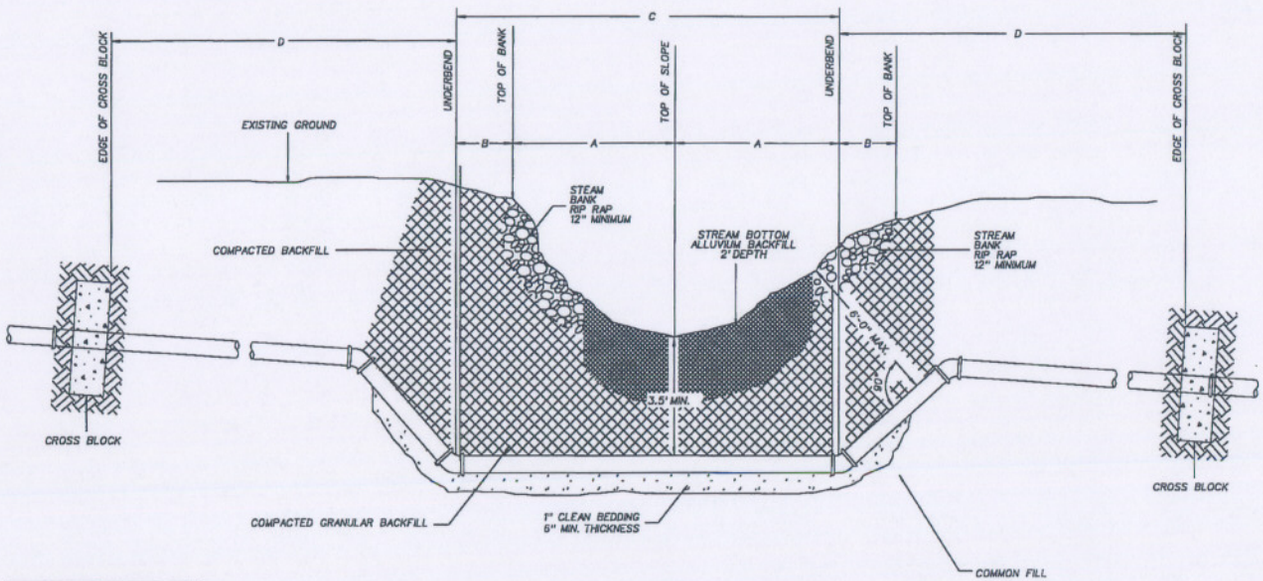

STREAM CROSSING INSTALLATIONS WITH WATER MAIN THAT IS LARGER THAN 12" DIAMETER TO BE APPROVED BY ENGINEER.

NOTES:

- ALL JOINTS SHALL BE JOINT RESTRAINED BETWEEN CROSS BLOCKS
- RIP RAP SIZE AND QUANTITY DETERMINED BY ENGINEER
- DIMENSIONS A,B,C & D DETERMINED BY FIELD REPRESENTATIVE
- FOR D.I. OVER/UNDER BENDS SEE WATER MAIN INSTALLATION DETAILS
- FOR CONCRETE THRUST RESTRAINT SEE WATER MAIN INSTALLATION DETAILS - DEAD END THRUST BLOCK

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ALLUVIUM STREAM BOTTOM STREAM CROSSING DRAWING (B)

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

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City Engineer

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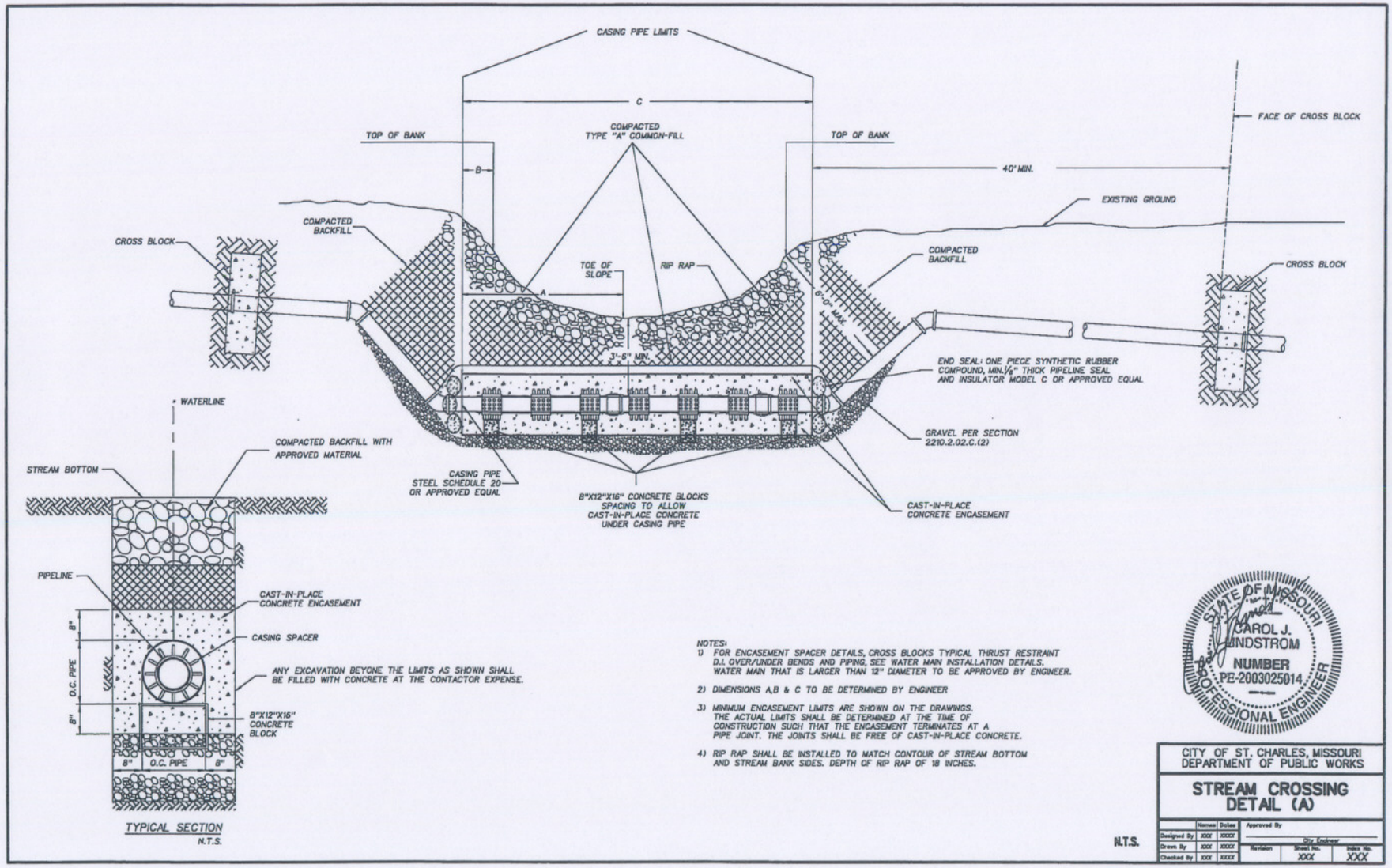

NOTES:

1) FOR ENCASEMENT SPACER DETAILS, CROSS BLOCKS TYPICAL THRUST RESTRAINT D.I. OVER/UNDER BENDS AND PIPING, SEE WATER MAIN INSTALLATION DETAILS. WATER MAIN THAT IS LARGER THAN 12" DIAMETER TO BE APPROVED BY ENGINEER.

2) DIMENSIONS A,B & C TO BE DETERMINED BY ENGINEER

3) MINIMUM ENCASEMENT LIMITS ARE SHOWN ON THE DRAWINGS. THE ACTUAL LIMITS SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION SUCH THAT THE ENCASEMENT TERMINATES AT A PIPE JOINT. THE JOINTS SHALL BE FREE OF CAST-IN-PLACE CONCRETE.

4) RIP RAP SHALL BE INSTALLED TO MATCH CONTOUR OF STREAM BOTTOM AND STREAM BANK SIDES. DEPTH OF RIP RAP OF 18 INCHES.

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STREAM CROSSING DETAIL (A)

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

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City Engineer

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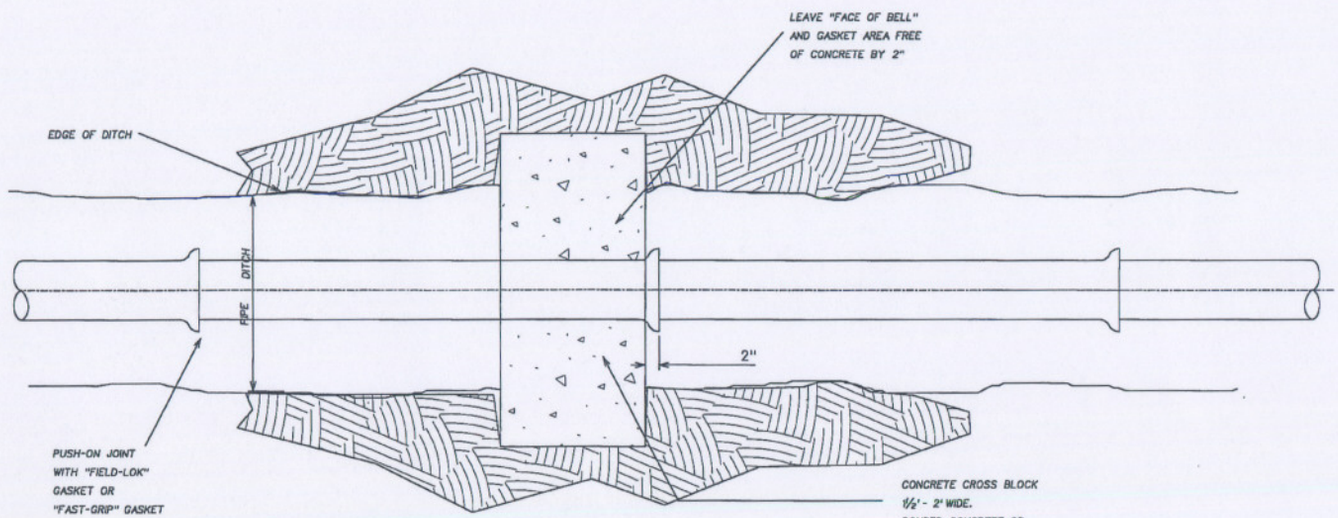

DITCH CHECK FOR SLOPES
GREATER THAN 3.5:1

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DITCH CHECK FOR SLOPES GREATER THAN 3.5:1

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

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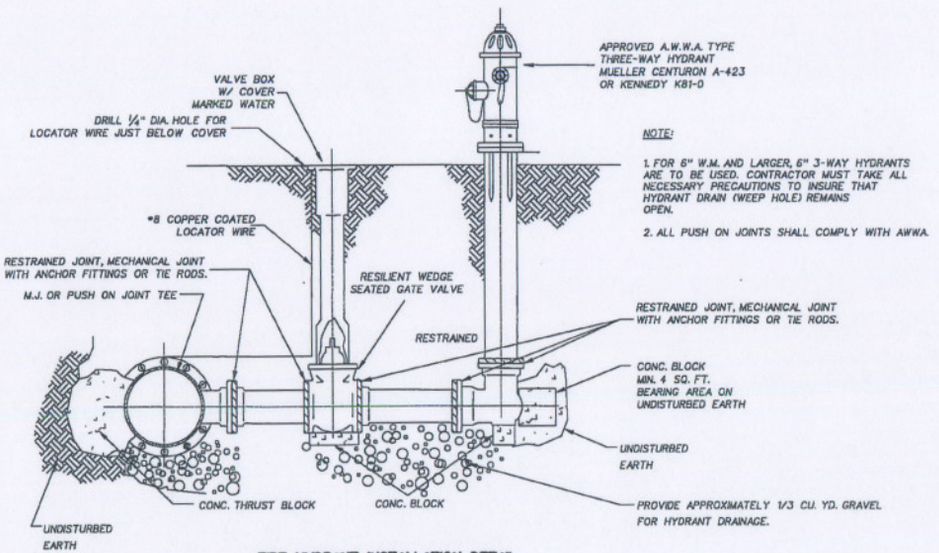
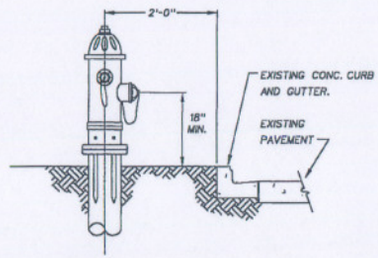


NOTE:

1. FOR 6" W.M. AND LARGER, 6" 3-WAY HYDRANTS ARE TO BE USED. CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO INSURE THAT HYDRANT DRAIN (WEEP HOLE) REMAINS OPEN.
2. ALL PUSH ON JOINTS SHALL COMPLY WITH AWWA.

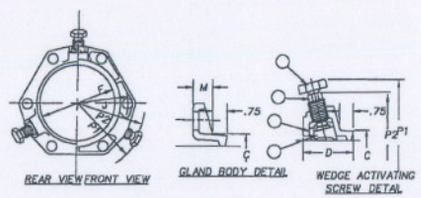
FIRE HYDRANT INSTALLATION DETAIL

SCALE: NTS



FIRE HYDRANT LOCATION DETAIL

SCALE: NTS



1. BREAK-AWAY HEAD, 1-1/4" ACROSS THE FLAT
2. 5/8" HEX-HEAD OPERATING SCREW
3. RUBBER SPACER
4. WEDGE

DIMENSIONS (INCHES): P1=25.0, P2=23.0, C=18.5, D=3.0, F=17.54, M=1.56, J=21.0

RESTRAINER JOINT DETAIL

SCALE: NTS

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PROFESSIONAL ENGINEER
M.T.S.

CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

FIRE HYDRANT DETAILS

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

Revision	Sheet No.	Index No.
	XXX	XXX

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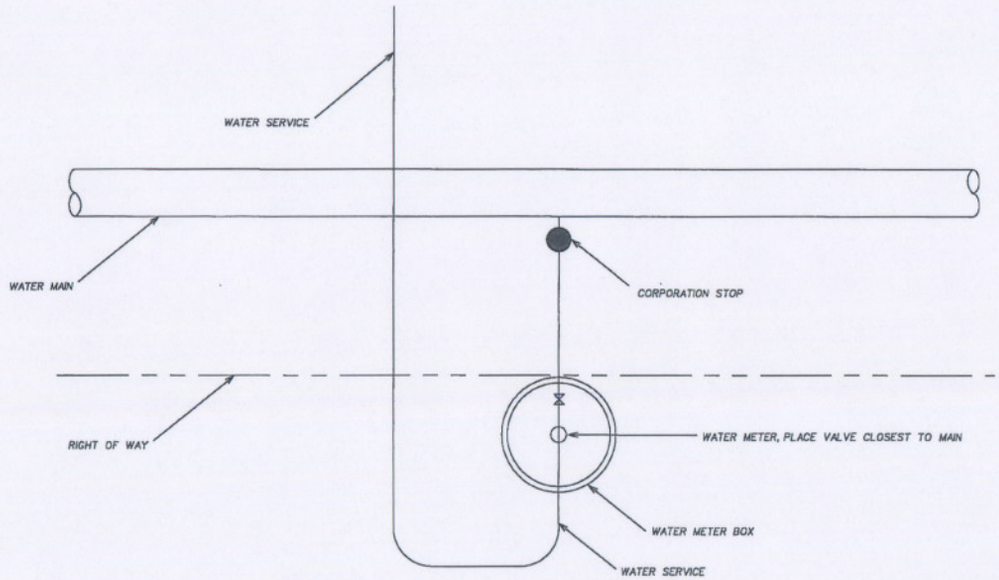

STATE OF MISSOURI
CAROL J. LINDSTROM
NUMBER PE-2003025014
PROFESSIONAL ENGINEER

N.T.S.

CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

METER LOCATION
FOR BACK TAPS

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

Revision	Sheet No.	Index No.
	XXX	XXX

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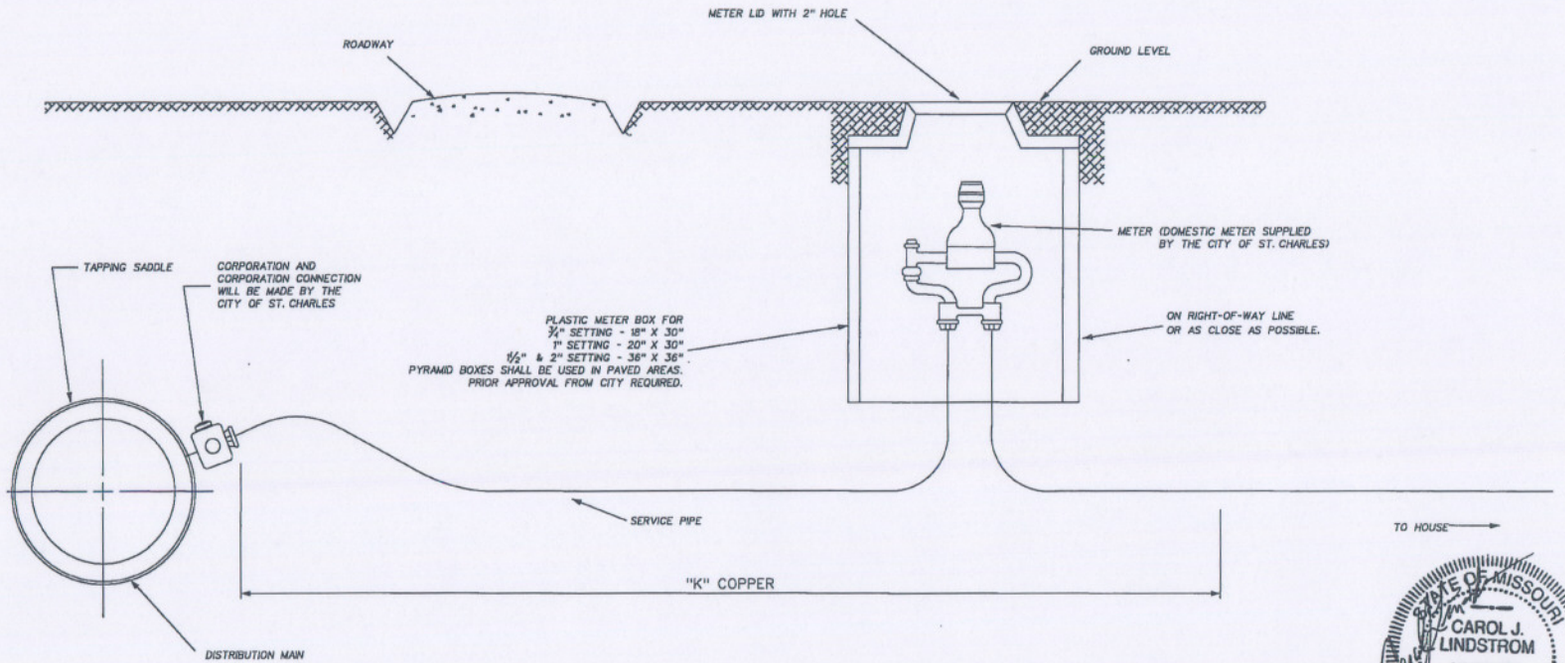

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CITY OF ST. CHARLES, MISSOURI
DEPARTMENT OF PUBLIC WORKS

¾", 1" & 2" SERVICE CONNECTION

	Names	Dates
Designed By	XXX	XXXX
Drawn By	XXX	XXXX
Checked By	XXX	XXXX

Approved By
City Engineer

Revision	Sheet No.	Index No.
	XXX	XXX

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